Treating children's eye infections without surgery

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Researchers from Hasbro Children's Hospital in Providence, R.I., report that medical management may be preferred over surgery for children with orbital cellulitis, an acute infection of the tissues surrounding the eye. They have determined the criteria for surgical intervention should be dependent upon the size of a subperiosteal abscess (SPA). The research is published in the journal *Ophthalmic Plastic & Reconstructive Surgery* and is now available online in advance of print.

Orbital cellulitis is most often the result of bacteria from a sinus infection, but may also be caused by a stye, a bug bite or a recent injury to the eyelid. It requires immediate medical attention to avoid further complications such as meningitis or loss of vision. In some cases, the infection will progress to a SPA. In these cases, surgery to drain the abscess and antibiotic therapy has been the usual course of treatment.

Through new research, Yoash Enzer, M.D., an ophthalmologist with Hasbro Children's Hospital, has found that the size of the abscess should be a determining factor in whether surgery is required for treatment. In his study the charts of 29 patients were reviewed; eight were managed surgically and 21 were managed medically. Frontal sinusitis was found in 11 of 17 patients who had CT scans, and four of those patients underwent surgical drainage, but only two of those patients showed positive culture results. Those two patients had an SPA volume that was greater than 1,250 millimeters.

Enzer says, "The management of pediatric orbital cellulitis with an SPA

has been largely surgical until the early 1990s when it was suggested that simple, aerobic infections were found in children under age nine, while older children had more complex microbial infections. In our study, however, patients both under nine and over nine required surgical intervention when the SPA volumes were greater than 1,250 millimeters."

In the paper, Enzer and his colleague propose that measuring the SPA volume using CT scan measurements should be considered as one of the most important criteria in determining the need for surgical drainage, regardless of age. Although age should be taken into account as a definite trend, it is equally important to emphasize that children both under and over the age of nine may require surgical drainage of the SPA. "Furthermore, we would make the argument that SPA regardless of volume size coupled with frontal sinusitis should make the clinician have an even lower threshold for surgical drainage than would normally be used in the same case without the presence of frontal sinusitis because of the added risk of developing an intracranial abscess," comments Enzer.

Enzer adds, "Our study found that larger abscesses are more likely to require surgical management. The approach to orbital cellulitis should be interdisciplinary and include the pediatric, otolaryngology, and ophthalmology teams, and, if necessary, neurosurgery. And at least one daily, thorough ophthalmologic clinical exam with special attention to visual acuity changes, persistent fevers, extraocular motility and pupillary exam testing should be performed, despite the difficulties in doing so in this population." He adds if there is no improvement or worsening clinically after 24 to 48 hours of medical management with antibiotic treatment, repeat imaging should be performed and surgical drainage considered.

"Avoiding surgery when medical management options exist is preferable for our patients and their families, and for the health system as a whole,

but must be done with close monitoring. This study clarifies which pediatric patients are best suited for surgery, and which can be managed medically," Enzer concludes.

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